

What is claimed is:

1. A method of driving a liquid crystal display having liquid crystal pixel cells arranged at each intersection
5 between a plurality of gate lines and a plurality of data lines in a matrix type and being driven with thin film transistors, said method comprising:

applying a first signal to the liquid crystal pixel cells for charging thereof during a beginning of a frame;
10 and

applying a second signal to the liquid crystal pixel cells for discharging thereof during an ending of the frame.

15 2. The method according to claim 1, wherein each of the liquid crystal pixel cells includes a liquid crystal layer formed of any one of a ferro-electric liquid crystal and an anti-ferro-electric liquid crystal.

20 3. The method according to claim 1, wherein each of the liquid crystal pixel cells includes a liquid crystal layer formed of a twisted nematic liquid crystal having a response speed of less than 10ms.

25 4. The method according to claim 1, further comprising the step of:

applying a gate pulse to the gate lines twice during the frame to sequentially apply the first signal and the second signal to the liquid crystal pixel cells.

30 5. A driving apparatus for a liquid crystal display

having liquid crystal pixel cells arranged in a matrix at each intersection between a plurality of gate lines and a plurality of data lines and being driven with thin film transistors, said apparatus comprising:

5 a data driver to apply a first signal to the liquid crystal pixel cells for charging thereof during a beginning of a frame and to apply a second signal to the liquid crystal pixel cells for discharging thereof during an ending of the frame; and

10 a gate driver to apply a gate pulse signal with at least two gate pulses to the gate lines during the frame to sequentially apply the first signal and the second signal to the liquid crystal pixel cells.

15 6. The driving apparatus according to claim 5, wherein each of the liquid crystal pixel cells includes a liquid crystal layer formed of any one of a ferro-electric liquid crystal and an anti-ferro-electric liquid crystal.

20 7. The driving apparatus according to claim 5, wherein each of the liquid crystal pixel cells includes a liquid crystal layer formed of a twisted nematic liquid crystal having a response speed of less than 10ms.

25 8. The driving apparatus according to claim 5, wherein the gate driver generates a gate pulse at a start of the frame and a mid-point of the frame.

30 9. The driving apparatus according to claim 5, further comprising:

a data compressor to compress the first signal
synchronized with the frame front region of the frame; and
a data controller to write the second signal during
the ending of the frame to apply the second signal to the
5 data driver.

10. The driving apparatus according to claim 9, further
comprising:

a memory to input and output the first signal at a
10 different speed under a control of the data controller to
compress the first signal.

11. A method of operating a liquid crystal cell
comprising:

15 charging a liquid crystal cell during a beginning
portion of a frame; and
completely discharging the liquid crystal cell before
an end of the frame.

20 12. The method according to claim 11, wherein a period of
discharging of the liquid crystal cell is short relative
to a period that the liquid crystal cell is completely
discharged.

25 13. A method of charging a liquid crystal cell
comprising:

applying any one of a positive and negative charges
to a pixel electrode of the liquid crystal cell during a
beginning of a frame;

30 applying no charge to the pixel electrode of the
liquid crystal cell during an ending of the frame; and

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of the next frame.

18. An apparatus for driving a liquid crystal display device comprising at least one thin film transistor (TFT),
5 comprising:

a gate driver to apply a gate pulse signal to the TFT connected to a pixel element, the gate pulse signal having at least two gate pulses within a one frame interval; and

10 a data driver to apply a video data signal to the pixel element in accordance with the gate pulse signal to charge the pixel element.

19. The apparatus of claim 18, wherein the gate driver comprises a plurality of gate drive circuits connected
15 together in series.